

Kaitai Shinsho: the historic Japanese translation of a Dutch anatomical text¹

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Until the sixteenth century, Japanese knowledge of anatomy and medicine was based largely on ancient traditional Chinese teaching. Following the European 'discovery' of Japan in 1542–43, when some Portuguese sailors were blown ashore at Tanegashima, Christian missionaries (mainly Portuguese Jesuits) visited Japan; St Francis Xavier landed in Kagoshima in 1549. The missionaries were accompanied by physicians, notable among whom was Luis de Almeida, of Lisbon, who arrived in 1555 and was the first western physician to practise in Japan. The end of the sixteenth century saw the persecution of the Christians and the eventual expulsion of the Portuguese missionaries (Veith 1950).

The coming to power in 1616 of the Togukawa Shoguns, who were to rule Japan until the Meiji restoration in 1867, sealed off Japan from the western world. By the 1633–1636 edicts of *sakoku* (closed country), western books were not allowed to enter Japan. However, there was one exception to the expulsion of Europeans: the Dutch, who had first arrived in Japan in 1600, developed their East India Company's trade with Japan and in 1641 were allowed to establish a factory on the small island of Deshima, off Nagasaki. Some intercourse now became possible in Deshima between the Japanese physicians and the Dutch factory doctors. In the following years, there was a succession of remarkable Dutch factory physicians and surgeons who practised in Deshima; these included Caspar Schambergen, Willem Hoffmann, Willem ten Rijn (1647–1700), Engelbert Kaempfer (1651–1716), Carl Pieter Thunberg (1743–1828) and Philipp Franz Balthasar von Siebold (1796–1866) (Bowers 1970).

During the seventeenth and early eighteenth centuries, a few western medical books came to be translated into Japanese. Thus, the Dutch translation by Cardus Battus in 1649 of 'De la Chirurgie' (1564) by Ambroise Paré (1510–90) was retranslated into Japanese by Narayabashi Chinzan (1648–1711), under the title 'Kol Gekwa Soden' (1706)². This was in manuscript and it was not until 1764 that the first printed version of the Japanese 'Paré' was published. Similarly, a German anatomical text 'Pinax microcosmographicus in quo certissimum anatomae' (1667) by Johann Remmelin (1583–1632) was translated into Japanese by Motoki Ryoi (1628–1697), under the title 'Oranda Zenku Naigai Bungizu' (1690). This also was in manuscript and the printed version was not published until 1772. These translated texts, however, exerted little influence on Japanese medical and surgical practice, as they were not allowed to circulate within the country.

With the arrival of the eighth Shogun, Yoshimune Tsunayoshi (1684–1751), who ruled 1718–1745, some steps were taken to relax Japanese isolationism. In 1720, the ban on the circulation of western books was lifted, provided they did not contain Christian doctrine. Medical books were therefore now exempt. Moreover, the Shogun's librarian, Aoki Bunzo, and his personal physician, Noro Genjo, were ordered to master the Dutch language. Together with the court interpreters, Nishi Zensaburo and Yoshio Kozaemon, who had previously been forbidden to read Dutch books, a Dutch language school was opened in Edo (now Tokyo) (Whitney 1885).

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² Note: In this paper, all personal names have been written in the traditional Japanese order, the family name preceding the personal name.

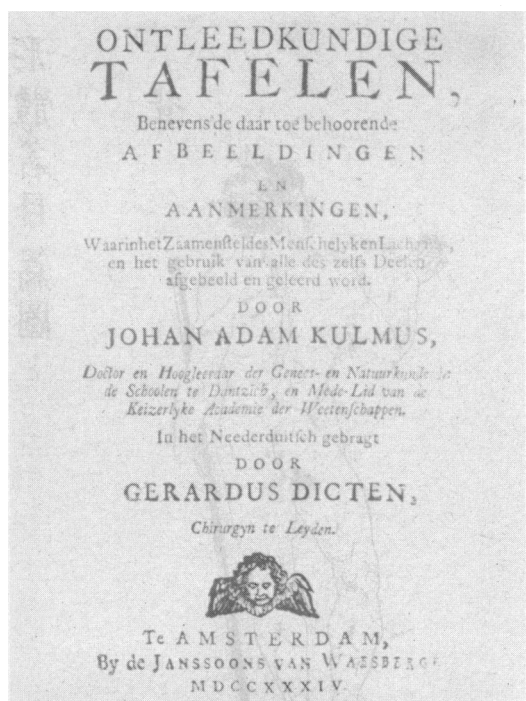


Figure 1. Title page of Kulm's 'Ontleedkundige Tafelen' (1734). (By courtesy of Dekker & Nordemann, Amsterdam)

One of the scholars attending the Dutch language school was an Edo physician, Maeno Ryotaku (1728–1803). It so happened that there fell into his hands a copy of a Dutch anatomical work, 'Ontleedkundige Tafelen' (1734) (Figure 1). This was, in fact, a Dutch translation (by Gerardus Dichten) of a Latin work 'Tabulae Anatomicae' (1731), by Johann Adam Kulm (or Kulmus) (1689–1745), a German anatomist who flourished in Danzig 1725–1745 and whose work was based on Vesalius (Kulm 1732). Kulm had dedicated this work to the Dutch anatomist, Frederik Ruysch (1638–1731).

Even though Maeno had great difficulty in comprehending the Dutch text, it was obvious to him, from the anatomical plates, that there were important differences compared with the traditional Sino-Japanese anatomical teaching. Anatomical dissection was infrequently performed, but an opportunity to compare the Japanese and Dutch anatomies presented itself in Edo in 1771 when a woman criminal, nicknamed Aocha Baba ('old mother green-tea'), was condemned to be executed at Kotsugahara ('The Plain of Bones') near Edo. As was the custom, her body was then dismembered and the parts displayed by the executioner. Maeno attended the event, accompanied by another physician, Sugita Gempaku (1733–1817) (Figure 2), and several other colleagues. Armed with their copy of the Dutch 'Anatomy' as well as with a contemporary Sino-Japanese anatomical text, they studied the corpse as demonstrated by the executioner and were convinced of the superiority of the Dutch version. They immediately resolved to prepare an exact translation of Kulm's work.

The story of the problems encountered in the course of the translation has been told by Sugita Gempaku in 'Rangaku Koto Hajime' ('Beginning of Dutch Studies'), which was written in 1815 but published posthumously (Sugita 1869). Translation of Kulm's work proved to be exceedingly difficult. Maeno and his colleagues managed only ten lines a day. Two years later, having copied and re-copied the text eleven times in Japanese, the work was completed. The final version was prepared for publication (in Chinese characters) by Sugita.

Maeno and Sugita had prepared a preliminary text 'Kaitai Yakuzu' (1773), published under the name of Sugita. It consisted of only five anatomical plates with explanatory text. In 1774, the full text, entitled 'Kaitai Shinsho' ('A New Work on Anatomy') was published,

鸛齋杉田朱生肖像



Figure 2. Portrait of Sugita Gempaku. Frontispiece of 'Chotei Kaitai Shinsho' (1812). (By courtesy of British Library)

背

形體名目篇圖



Figure 3. Plate I in 'Kaitai Shinsho' (1774). (By courtesy of British Library)

again under the name of Sugita Gempaku (Sugita 1774), the co-authors being Maeno Ryotaku, Katsuragawa Hoshu (1750–1808), Nakagawa Junan (1739–80) and Ishikawa Genjo (1744–1816) (Huard 1954).

'Kaito Shinsho' was published as five slim volumes, the Atlas of 41 anatomical plates being incorporated into the second half of Volume I. The plates were engraved by Yoshio Eisho, who 'used a magnifying lens to see well the original Dutch plates' (Mestler 1954, 1957) (Figure 3). They illustrate every facet of human anatomy, including the lymphatic system and the organs of special sense. The plates are not numbered, but the eighteenth, which illustrates the muscular system, is patently derived (via Kulm) from Andreas Vesalius' 'De Humani Corporis Fabrica' (1543). 'Kaitai Shinsho' is often referred to as the 'Japanese "Vesalius"' (Boxer 1950). However, the last four plates (showing the tendons of the hands and feet) were derived, not from Vesalius, but from 'Ontleding des Menschelycken Lichaams (1690) by the Dutch anatomist, Govert Bidloo (1649–1713).

The title page of the 'Kaitai Shinsho' Atlas, with its figures of Adam and Eve (Figure 4), was not taken from Kulm's original work, but from 'Vivae Imagines Partium Corporis Humani' (published in 1566 in Antwerp by Christopher Plantin) by the Spanish anatomist, Juan Valverde de Hamusco (fl. 1552). The frontispiece of Kulm's original work was a more elaborate engraving by J C Philips, showing a dissection scene and in the foreground a table on which lay instruments used in anatomical dissection, reminiscent of Vesalius (Figure 5).

'Kaitai Shinsho' proved to be a milestone in the history of anatomy and medicine in Japan. It was the first western scientific work to be properly translated into Japanese by Japanese scholars, to be printed and published in Japan and to be widely circulated among Japanese physicians and surgeons. It became the standard Japanese work on anatomy and overthrew traditional Chinese concepts. It completely overshadowed any other previously published translations of western medical texts. The anatomical plates and text were received with great enthusiasm and a copy was presented to the Shogun. The first edition was rapidly sold out.

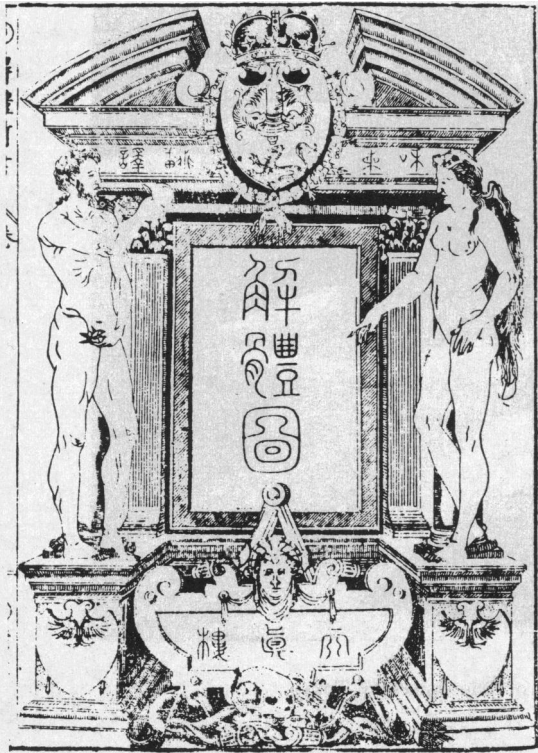


Figure 4. Title page of 'Kaitai Shinsho' (1774). (By courtesy of British Library)



Figure 5. Frontispiece of Kulm's 'Tabulae Anatomicae' (1732). (By courtesy of Wellcome Institute Library, London)

Original copies of 'Kaitai Shinsho' are now comparatively rare; one copy exists in the UK, in the British Library.

Many further editions of 'Kaitai Shinsho' were published during the first half of the nineteenth century. Especially of note is that by Otsuki Gentaku (1757–1827), who completely rewrote the work (in six volumes), in 1798, under the title 'Chotei Kaitai Shinsho', although it was not published until fourteen years later (Otsuki 1812). Otsuki also translated the standard Dutch grammar into Japanese, 'Rangaku Kaitei' (A Ladder to Dutch language and knowledge) (1783). *Rangaku* was the name given to the study of Dutch knowledge (*Ran* = Dutch; *gaku* = knowledge) and Otsuki was regarded as the leading *rangakusha* in Edo.

A further revision of 'Kaitai Shinsho' by Udagawa Genshu (1769–1834), entitled 'Ihan Teiko' (1805), was a much enlarged version of the original, in four volumes, with one hundred plates (the first copper engravings in Japan), which was more an outline of the principles of medicine rather than a simple anatomical text (Miyasita 1975). The success of 'Kaitai Shinsho' served as a stimulus for more exact translations of many other western works on medicine, surgery and therapeutics.

The importance, however, of the publication of 'Kaitai Shinsho' lay not only in its impact on the fields of anatomy and medicine. It served also as a catalyst in the Japanese intellectual revolution of the nineteenth century, leading ultimately to the westernization of scientific and medical thought in twentieth century Japan.

Following the Meiji restoration the first western medical school in Japan was opened in Nagasaki. During its first five years it was directed by the Dutch physician, Pompe van Meerdervoort (1829–1908), but by 1862, when it became the Institute for Western Medicine and moved to Edo, it was the great Japanese physician and scholar, Ogata Koan (1810–1863), who was appointed director (Fujikawa 1911).



Figure 6. Memorial to 'Kaitai Shinsho' and the foundation of Keio University, Tokyo

'Kaitai Shinsho' memorial in Tokyo

Memorials to honour a historic medical book must be extremely rare, anywhere in the world. Such a memorial was erected in 1959 in Tokyo to commemorate the publication of 'Kaitai Shinsho'. The memorial is situated in the Tsukiji quarter of Tokyo, facing St Luke's International Hospital, which was founded in 1902 by the American medical missionary, Dr Rudolf Bolling Teusler (1876–1936). This site for the memorial was chosen because it was very close to where Maeno Ryotaku had his house on the estate of the Daimyo Okudahira. The memorial consists of two large slabs of polished granite – one brown, the other black – placed side by side at an angle, like the open pages of a book (Figure 6). The brown slab is engraved with a standing male figure, an exact copy of the male figure in plate 1 of the Atlas in 'Kaitai Shinsho' (see Figure 3). The black slab is engraved with a description in Japanese of the history of 'Kaitai Shinsho', ending with these words: 'Thus, the source of *rangaku* sprang from here and served to revitalise the progress of modern Japanese science'.

Alongside the 'Kaitai Shinsho' memorial stands a monument commemorating another milestone in the history of Japanese learning. This was the foundation of Keio University, Tokyo, in 1858 by Fukuzawa Ukichi (1834–1901). Fukuzawa was a low-ranking *samurai*, a student of Ogata Koan and famous as educator and philosopher. In 1858, in his house, which was also on the estate of the Daimyo Okudahira, he commenced private classes to teach *rangaku*; this was eventually to develop into Keio-gijuku (Keio University). In 1868, the school moved to Shiba and in 1871 to Mita, where Keio University now stands (Fukuzawa 1960, Aida 1974). The memorial, which was erected in 1958 on the occasion of the centenary of the foundation of Keio University, consists of one large rectangular block of polished black granite, on the upper surface of which lies an upturned open book, engraved in Japanese with Fukuzawa's famous cry for democracy, the English translation of which reads: 'Heaven created no man above another, or below'. The side of the block is engraved in Japanese with an explanation of the memorial, the English translation of which is as follows:

'The origin of Keio University dates back to 1858 when Fukuzawa Ukichi opened a school to teach *rangaku* in the house of Daimyo Okudaira. The actual site is now inside St Luke's Hospital which is just to the north of this memorial. In addition, this place is historically significant as the one where Maeno Ryotaku first translated the Dutch 'Anatomy'.

Therefore this is a fitting place to commemorate the dawn of modern Japanese Science'.

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